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Ann M. Codrington, Director
Drinking Water Protection Division
Office of Ground Water and Drinking Water
1200 Pennsylvania Avenue, NW (MC-4607M)
Washington, DC 20460

Re: Comments on the Draft Guidance for Transition from Class II to Class VI

Dear Director Codrington:

Summit Power Group, LLC is pleased to offer the following comments on the United States Environmental Protection Agency's ("EPA's" or "Agency's") Draft Underground Injection Control (UIC) Program Guidance on Transitioning Class II Wells to Class VI Wells. Summit is a Seattle-based clean energy development company that is focused on bringing low carbon energy projects into the marketplace. Summit's business lines include high-efficiency natural gas power plants, wind projects, solar projects, and a carbon dioxide capture business called Summit Carbon Capture. Summit is in the process of developing the Texas Clean Energy Project ("TCEP"), which is a recipient of a United States Department of Energy Clean Coal Power Initiative award. TCEP is a coal gasification project that will capture more than 90 percent of its carbon dioxide, which will be utilized for enhanced oil recovery and ultimate geological sequestration in petroleum reservoirs. In addition to TCEP, Summit is in the process of developing other coal and natural gas power projects that will capture industrial carbon dioxide for underground injection and permanent sequestration.

As a company committed to capturing and sequestering CO₂ and contributing to the establishment of a carbon capture and storage (CCS) industry that provides meaningful CO₂ reductions on a global scale, Summit supports the need for predictable, easily implemented, and clear regulatory frameworks for both capture and sequestration. We have reviewed the draft transition guidance in this light, and it is from this perspective that we offer our comments.

We recognize the challenges inherent in regulating carbon sequestration and commend EPA for its efforts in developing the UIC Class VI rule. At the same time, we value the Class II program and recognize the extensive oil and gas industry experience with CO₂ injection for EOR in Class II settings. For years, such injection has been successfully undertaken, in large part because the geologic characteristics of oil and gas reservoirs are better understood than many other geologic formations. It is well established that EOR can provide highly secure sequestration of injected CO₂ in geological formations that have trapped oil and gas for eons without migration or leakage.

EPA's goal for the draft transition guidance is to provide more clarity regarding when and how Class II wells might be required to transition to Class VI. We support EPA's desire to clarify these issues, because it is essential that EOR owner/operators understand the conditions under which a permit transition might be required. The oil producers who are willing to buy captured CO₂ from TCEP and other anthropogenic sources are quite clear that they will not do so if they face the risk of having to use Class VI wells. That means a Class VI well requirement could stop the development of CO₂ capture from power plants in its tracks.

If the guidance is not clear and workable, companies like Summit will face significant challenges integrating carbon capture into new power plants and large industrial facilities. When EPA issues the final GHG regulation for new power plants, new coal-based generators (such as coal gasification plants, like TCEP, which do not burn coal) will be required to capture and sequester a significant portion of their CO₂ emissions, which will increase plant capital costs. The ability to sell the captured CO₂ to EOR operators will provide the power plant an essential revenue stream. If EOR operators are unwilling to purchase this CO₂, construction of new coal gasification power plants, or any other CO₂ capture facility for that matter, will become economically prohibitive for the foreseeable future, absent other incentives or sources of revenue.

We note that EPA, in the proposed "Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units," emphasizes the role of EOR in reducing the cost of CCS at new power plants, and highlights the additional benefits of promoting EOR throughout that rulemaking. In fact, "EPA anticipates that many early geologic sequestration projects may be sited in active or depleted oil and gas reservoirs because these formations have been previously well characterized for hydrocarbon recovery, likely already have suitable infrastructure (e.g., wells, pipelines, etc.), and have an associated economic benefit of oil production."¹

Using CO₂ for EOR is the only oil production method that traps carbon underground. The preamble to the proposed GHG standards notes that CO₂-EOR is "providing approximately 281,000 barrels of oil per day in the U.S. which equals about 6 percent of U.S. crude oil production," and that "there are currently twenty-three industrial source CCS projects in twelve states that are either operational, under construction, or actively being pursued, which are or will supply captured CO₂ for the purposes of EOR. This further demonstrates that CCS projects associated with large point sources are occurring due to a demand for CO₂ by EOR operations."² Moreover, EPA's proposal clearly recognizes the value of promoting EOR, stating:

Identifying partial CCS as the BSER [Best System of Emission Reduction] also promotes further use of EOR because, as a practical matter, we expect that new fossil fuel-fired EGUs that install CCS will generally make the captured CO₂ available for use in EOR operations. The use of EOR lowers costs for production of domestic oil, which promotes the important goal of energy independence.³

On that basis, EPA explains that it "expect[s] that for the immediate future, virtually all of the CO₂ captured at EGUs will be injected underground for long-term geologic sequestration at sites where enhanced oil recovery is also occurring."⁴

¹ US EPA, *Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units: Proposed Rule*, January 8, 2014, 79 FR 1474.

² US EPA, 79 FR 1474.

³ US EPA, 79 FR 1480.

⁴ US EPA, 79 FR 1482.

We highlight EPA's statements in the EGU NSPS proposal because we are concerned that the draft transition guidance, as currently written, has created significant uncertainty regarding the regulatory treatment of CO₂ injection into Class II EOR wells. For over 35 years, CO₂ injection for enhanced oil recovery has proceeded without incident using Class II wells, providing a sound and predictable framework for the development of CO₂-EOR projects, along with other types of injection in oil and gas fields.

As compared to the Class II program, the requirements of the Class VI program are both more burdensome and less predictable. Through our considerable experience, we have learned that oil producers willing to buy CO₂ from power plants are flatly unwilling to risk having to use Class VI wells. Unfortunately, the draft transition guidance does not provide the necessary certainty for CO₂-EOR operators regarding whether and when they might be required to transition from the Class II to the Class VI program. Put another way, CO₂-EOR operators must have clear guidelines for how to use industrially captured CO₂ in their EOR projects while remaining in the Class II program; absent this clarity Summit believes there will be no market for the captured CO₂, and hence no ability to develop power plants with CO₂ capture in today's environment (when EOR provides the only significant revenue source to help offset the added costs of CO₂ capture).

In fact, a key shortcoming of the draft guidance is that it does not clearly and objectively describe how the transition factors listed in the Class VI rule are to be applied. Unless this weakness is addressed, the transition guidance will likely delay or derail EOR projects utilizing captured CO₂, which would seem to contradict the rationale articulated in EPA's proposed NSPS, noted above, making compliance with that program more expensive and slowing the growth in domestic oil production.

Below we discuss three issues that we believe need to be addressed in the Draft Guidance in order to promote CO₂-EOR in a manner that protects underground sources of drinking water (USDWs), protects the climate, and can be readily implemented by commercial EOR operators. These issues are: (1) to provide a means of establishing the primary purpose of injection; (2) to avoid any appearance of revising or undermining the current Class II regulatory framework; and (3) to ensure that transition to Class VI will not be triggered by normal operations at EOR sites.

1. EPA should provide further clarification on the "primary purpose of injection"

The UIC Class VI regulation, at 144.19(a), states that "owners or operators *that are injecting carbon dioxide for the primary purpose of long-term storage into an oil and gas reservoir* must apply for and obtain a Class VI geologic sequestration permit when there is increased risk to USDWs compared to Class II operations..."⁵ (emphasis added) This language limits the applicability of the Class VI rule to a subset of Class II wells: those that are injecting for the primary purpose of GS. Class II wells injecting CO₂ for the purpose of enhanced oil recovery are not covered by the Class VI rule.

Unfortunately, while the language of the Class VI rule is straightforward, its implementation in the field is unclear because EPA has never explained how the "primary purpose" of a well is to be determined. In fact, on the first page of the draft transition guidance, EPA states that, "no single factor should be relied on to make a

⁵ USEPA, *Federal Requirements under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO₂) Geologic Sequestration (GS) Wells; Final Rule*, December 10, 2010, 75 FR 77288, section 144.19(a).

determination of *injection purpose* and potential risk,”⁶ (emphasis added). This statement is at odds with the regulatory text, quoted above, which makes it unambiguously clear that only wells with GS (not EOR) as their primary purpose need consider the transition factors. It is essential that EPA’s guidance on this issue properly describe the requirements of the Class VI rule, and we strongly urge EPA to correct this misrepresentation of the rule, by stating that determinations of primary purpose and increased risk are separate and distinct issues, and that the determination of the primary purpose precedes applicability of the Class VI rule.

Further, we urge EPA to clarify how the primary purpose is to be determined. Without such information, owners/operators of Class II wells have no way of ensuring that they can continue operating under the Class II program, and no way of anticipating when or if they might be required to transition to Class VI. Both the Class VI rule and the draft transition guidance are unclear as to who determines the primary purpose of a well (e.g., the project owner, the UIC Class II director, or the UIC Class VI director?). Further, no objective basis is established for determining what the primary purpose is and how to evaluate that it has changed.

Although Summit is prepared to argue to oil producers that EPA unambiguously does not intend that CO₂-EOR operators will ever have to use Class VI wells for EOR, we have already experienced how difficult it is to overcome what oil producers regard as a real regulatory risk. Any arguable ambiguity in EPA’s interpretation of the regulatory text makes the job of convincing the oil producers more difficult, if not impossible. Clarity around the determination of primary purpose is critical to effective implementation of the Class VI program, and Summit strongly urges EPA to reduce the EOR industry’s uncertainty on this point. Below, we offer some preliminary views on how to do so, which we would be happy to discuss further.

- First, EPA should clearly state in the transition guidance that CO₂ injection occurring in Class II wells, currently and for the foreseeable future, is being undertaken for the primary purpose of EOR. The proposed NSPS makes this point, but EPA’s Office of Water has never been as direct.
- Second, EPA should clearly state in the transition guidance that the only Class II wells that could potentially be required to transition to the Class VI program are those that *change* their purpose from EOR to GS.
- Third, EPA should acknowledge that the injector – not the regulator – is in the best position to determine when the purpose of injection has changed. As explained in the preamble of the Class VI rule, “EPA believes that *if the business model for ER changes* to focus on maximizing CO₂ injection volumes and permanent storage, then the risk of endangerment to USDWs is likely to increase,”⁷ (emphasis added). This statement correctly links primary purpose to the business model, and the project owner is clearly in the best position to make that determination. (As a side note, there is no current business model for any oil producer to conduct the type of CO₂ injection for non-EOR purposes that EPA appears to be concerned about. Such injection – in which CO₂ injection leads to over-pressurizing the reservoir – is antithetical to EOR. No one will operate in this manner for the foreseeable future because CO₂ is a commodity purchased for the purpose of enhancing oil recovery, and CO₂ is a business cost, not a source of revenue. There would be plenty of time to draft relevant regulations for such a business sector, if it ever developed.)

⁶ US EPA, *Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Program Guidance on Transitioning Class II Wells to Class VI Wells*, EPA-816-P-13-004, December 2013, p. ii.

⁷ USEPA, 75 FR 77244.

- Fourth, EPA should clarify that EOR may be the primary purpose even if the capture and sequestration of the subject CO₂ is required under other regulatory regimes. The EPA should reaffirm its support for the notion that permanent sequestration can be achieved ancillary to EOR operations.

While we appreciate EPA's statement that "traditional EOR projects are not impacted by this rule-making and will continue to operate under Class II permitting requirements,"⁸ we find that the force of that statement is severely undermined by EPA's failure to explain how the primary purpose is to be determined.

Finally, we note that EPA's recent RCRA rule on "Hazardous Waste Management System: Conditional Exemption for Carbon Dioxide (CO₂) Streams in Geologic Sequestration Activities" could provide a model for confirming a change in the primary purpose, if EPA believes it necessary to require documentation on this issue. Under the RCRA rule, "any Class VI Underground Injection Control well owner or operator, who claims that a carbon dioxide stream is excluded under paragraph (h) of this section, *must have an authorized representative (as defined in 40 CFR 260.10) sign a certification statement ...*"⁹ While we are not certain that such an approach is needed in this instance, a certification from the designated representative of an EOR project could potentially be provided when the primary purpose changes, due to a change in the business model of injection.

2. Avoid any implication that the Class II program is changed or overridden by Class VI

Our second concern is that the draft transition guidance appears to allow the UIC Class VI Program Director to require transition from Class II to Class VI even when the CO₂ injection is conducted in compliance with the Class II permit. This issue arises because the draft transition guidance states in several places that "the determination of need for a Class VI permit is based on increased risk to USDWs."¹⁰ Our concern with this language is that the term "increased risk" is not defined, and at several points in the document it appears that the UIC Class VI Program Director could require a Class II well conducting GS as its primary purpose to be re-permitted under Class VI even if the well is operating in full compliance with its Class II permit. Nowhere in the document does EPA confirm that Class II GS wells in compliance with their permit are unlikely to pose "increased risk" to USDWs.

The requirements of the Class II rules were designed to protect USDWs from endangerment when fluids are injected for enhanced oil recovery or other activities in oil and gas fields. The regulations require Class II wells to be sited in a manner that ensures (1) there is separation from any USDW by a confining zone that is free of known or open faults¹¹; (2) casing and cementing of Class II wells is undertaken in a manner that will prevent movement of fluids into or between USDWs¹²; and (3) the injection pressure at the wellhead shall not exceed a maximum which is determined to ensure that "in no case shall injection pressure cause the movement of injection or formation fluids into an underground source of drinking water."¹³

⁸ US EPA, 75 FR 77245.

⁹ US EPA, *Hazardous Waste Management System: Conditional Exclusion for Carbon Dioxide (CO₂) Streams in Geologic Sequestration Activities: Final Rule*, January 3, 2014, 79 FR 364.

¹⁰ US EPA, *Geologic Sequestration of Carbon Dioxide: Draft Underground Injection Control (UIC) Program Guidance on Transitioning Class II Wells to Class VI Wells*, EPA-816-P-13-004, December 2013. See for example, p. 1, p. 5, p. 7, etc.

¹¹ US EPA, *Part 146 – Underground Injection Control Program: Criteria and Standards – Subpart C – Criteria and Standards Applicable to Class II Wells*, Section 146.22(a).

¹² US EPA, *Part 146*, Section 146.22(b)(1).

¹³ US EPA, *Part 146*, Section 146.23(a)(2).

We are concerned that EPA's draft guidance regarding the transition from Class II to Class VI for sites doing GS does not explicitly state that the Class II permit will remain in effect until it is demonstrated that the Class II permit is no longer preventing endangerment of USDWs. EPA's statement in the draft guidance that "the Class VI requirements are more comprehensive and specific than the Class II requirements" increases the EOR industry's concern.¹⁴ Further, the draft guidance states that "periodic evaluations of information on wells in mature oil and gas fields" is one of the ways to identify wells that should transition.¹⁵ We disagree with this statement, as it is the primary purpose of the well that must initially determine the applicability of Class VI. Perhaps most troubling, however, is the discussion in the draft guidance of the situations under which a Class II well might not be required to transition to Class VI:

EPA recognizes that Class II wells may not necessarily transition to Class VI. This may be because of an evaluation of the above factors results in a determination that a Class VI permit is not needed, either because the owner or operator determines that he/she does not want to proceed with or continue carbon dioxide injection and decides to plug the well, or because a determination is made that the Class II well was not sited or constructed in a manner that allows for safe, long-term storage of large volumes of carbon dioxide as a Class VI injector.¹⁶

We are concerned that EPA's statement fails to recognize the possibility that a Class II well conducting GS might not need to transition because there is no increased risk to USDWs. EPA's explanation assumes that the only options are that the owner/operator decides not to transition due to the burden associated with the Class VI rule, or that it cannot transition due to flaws in the well's siting or construction.

EPA may believe that the Class VI regulations are "more specific," "comprehensive," and better reflect "the unique potential risks posed to USDWs by GS."¹⁷ Nonetheless, EPA's Class VI rule does not provide the Agency with open-ended authority to override the Class II program unless it is determined that specific Class II permits are not protective of USDWs. If EPA is concerned that the Class II Program is insufficiently protective of CO₂ injection, the Agency should address this issue explicitly through its established processes. As there appears to be little basis for suggesting EPA actually harbors this concern, either empirical or via public statements from Agency officials, the Agency should state clearly that the Class II program is designed to prevent harm to USDWs, and that the effectiveness of that program is assumed for all wells in compliance with the Class II regulations.

3. EPA needs to more clearly distinguish normal operating procedures from those that could require a transition.

Finally, we urge EPA to ensure that the final guidance provides more specific guidance on how owners/operators and UIC Program Directors can distinguish normal EOR operation from operational activities that "increase risk" and therefore require transition. We believe that this problem will be addressed in large part if EPA clarifies that Class GS II wells in compliance with their permits need not transition. Nonetheless, the discussion of the transition factors would benefit from more detail. The intended audiences of the draft transition guidance (e.g., owners/operators of affected Class II wells and UIC Program Directors) must to be able to identify with reasonable confidence when a particular transition factor goes from being acceptable to being a sign of "increased risk to

¹⁴ US EPA, *Draft Transition Guidance*, p.2

¹⁵ US EPA, *Draft Transition Guidance*, p. 6.

¹⁶ US EPA, *Draft Transition Guidance*, p. 17.

¹⁷ US EPA, *Draft Transition Guidance*. See, for example, p. 2-3.

USDWs.” We understand that this is a difficult task because every site is different. Nonetheless, EPA must work harder to ensure that these determinations follow a common approach, are based on objective data, and are replicable.

We appreciate EPA’s efforts in developing the draft guidance and hope that our comments will help the Agency address significant concerns regarding implementation of the Class II – Class VI transition on the part of the EOR industry and those industries with the potential to capture CO₂. Currently, early movers in the CCS sector believe that that (1) EOR presents the only realistic near-term destination for substantial volumes of captured CO₂ due to the revenues from CO₂ sales and the known regulatory regimes in the Class II Program and (2) projects undertaking EOR might be forced to transition from Class II to Class VI based on a misunderstanding of their primary purpose and/or a misapplication of the transition factors. Such a well class transition would stymie the ability of CCS projects to make progress in the commercial marketplace.

We do not believe that EPA intends to make CO₂-EOR difficult. To the contrary, we think EPA’s many actions in this area indicate that the Agency supports CO₂ sequestration and recognizes that injection in EOR fields can be safe and beneficial in several ways, including for permanent CO₂ storage. The draft transition guidance, however, has created significant concern because it does not provide a clear and predictable process for determining when and whether Class II wells would be required to transition to Class VI. We hope that EPA will take Summit’s concerns seriously and provide clearer guidance that will support both the industry and its regulators. Doing so will not weaken the environmental attributes of the UIC program. Indeed, clear and effective guidance will further reinforce the larger EPA agenda of redirecting CO₂ emissions that were destined for the atmosphere to underground reservoirs where they will be permanently removed from the carbon cycle and mitigate the dangers of climate change.

Summit appreciates the opportunity to provide you with our comments and recommendations, and we look forward to continuing to work with EPA as the Agency finalizes the transition guidance. Should you have any questions about these comments, please feel free to contact Sasha Mackler, Vice President of Summit Carbon Capture at smackler@summitpower.com or 206-239-7567.

Sincerely,



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